TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT
CHARACTERIZATION OF THE 105-H SPENT FUEL BASIN

Identification No.: RL-DD072
Date: August 2001
Program: Decontamination and Decommissioning
OPS Office/Site: Richland Operations Office/ Hanford Site
PBS No.: RL-RC01
Waste Stream: Characterization of LLW debris (ER-05, risk = 4)
TSD Title: N/A
Waste Management Unit (if applicable): N/A
Facility: 105-H

Priority Rating: This entry addresses the Accelerated Cleanup: Paths to Closure (ACPC) Priority:

____ 1. Critical to the success of the ACPC
_X_ 2. Provides substantial benefit to ACPC projects (e.g., moderate to high lifecycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays)
____ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: Characterization of the 105-H spent nuclear fuel basin and contents.

Need/Opportunity Category: *Technology opportunity* - the project desires an alternative to the current or planned baseline technology/process (i.e., a baseline exists but can be improved).

Need Description: Technologies are needed for the characterization, including visual imaging, of the material in the 105-H spent nuclear fuel basin (hereafter referred to as the basin). The basin is filled with soil backfill, but have equipment, sludge, and possibly other unknown materials in the bottom.

Schedule Requirements:
Earliest Date Required: 6/1/2002
Latest Date Required: 12/30/2002

Problem Description: The 105-H spent fuel basin is a reinforced concrete basin about 6,000 square feet and 22 feet deep. The basin (and pick up area) contains contaminated sludge estimated to be 6 to 8 inches deep. Graphite stringers, aluminum tubing, galvanized shipping buckets, and other miscellaneous radioactive materials are on the basin floor. The water in the basin was drained down to approximately three feet and then the basin was completely filled with soil. The concrete walls and floor of the basin are also contaminated to an unknown extent. Severe leakage from the basin into the surrounding soil probably did not occur.

Benefit to the Project Baseline of Filling Need: By characterizing the contents of the basin prior to work initiation, unexpected events (e.g., uncovering very high dose rate or fuel material) will be minimized because work and worker protection can be better planned.

Functional Performance Requirements: It is desirable that characterization be completed prior to removal of the soil backfill. Characterization includes identifying and providing visual images of material within the basin, locating material, and determining the radioactive contamination levels by location/material. Characterization is required for the soil in the basin, the material placed in the bottom of the basin, and the basin walls themselves. Determination of RCRA metals and other hazardous materials is desirable. Characterization of radioactive contamination in the soil that is in and under the basin is also desirable.

WBS No.	***TIP No***.
1.4.03.1.1.04.06.02.08.42.10	N/A

Relevant PBS Milestone: PBS-MC-031

Justification for Need:

Technical: In situ characterization will lead to reduced personnel exposures and better planning.

Regulatory: The Tri-Party Agreement applies to the decommissioning of 105-H

Environmental Safety and Health: By characterizing the contents of the basin prior to work initiation, unexpected events (e.g., uncovering very high dose rate or fuel material) will be minimized because work and worker protection can be better planned.

Cost Savings Potential (Mortgage Reduction): Proper planning, versus planning for worse case unknowns, will minimize cost.

Cultural/Stakeholder Concerns: Stakeholders are concerned with worker and environmental protection.

Other: None identified.

Current Baseline Technology: GammaCam™, Eberline RO-7 ™, LARADS ™, and ISOCS™ after the top 17 feet of fill is removed

End User: Environmental Restoration Project

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